

The Ocean's Mesoscale, its Impacts on Pelagic Ecosystems and How Satellite Viewing Changed (Created?) Interdisciplinary Oceanography

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The ocean's mesoscale, the weather of the sea, is comprised of planetary waves and eddying motions with characteristic spatial scales of 10's to 100's of km's, feature life spans from weeks to years, horizontal velocities of several 10's of km per day and vertical displacements of isopycnal surfaces of 10's to a few 100's of meters. These physical motions influence vertical nutrient transport and light availability and the stirring and mixing of water masses – all of which have a biological impact in the pelagic ocean and how we sample these processes. Here, I review how interdisciplinary satellite observations have change how oceanographers view ocean ecosystems and the coupled Earth system questions they are now able to address. In particular, we focus on what satellite ocean color and altimetric data, in concert with field observations, tell us about the role of mesoscale processes on pelagic ecosystems and ocean biogeochemical cycles.